

What is claimed is:

1. An optical module, comprising:

a light-emitting semiconductor device having a first surface and a second surface, the light-emitting semiconductor device emitting light;

5 a driver electrically connected to the light-emitting device for driving the light-emitting semiconductor device, the driver having a primary surface and a secondary surface opposing to the primary surface;

a light-receiving semiconductor device for receiving light emitted from the second surface of the light-emitting semiconductor device and passed
10 through a space above the secondary surface of the driver; and

a bench having a first region and a second region, the light-emitting semiconductor device being mounted on the second region and the driver being mounted on the first region,

wherein a level of the first region of the bench is lower than a level of
15 the second region of the bench.

2. The optical module according to claim 1, wherein the level of the second region of the bench is higher than a level of the secondary surface of the driver.

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3. The optical module according to claim 1, wherein a plurality of electrodes of the driver is provided in the primary surface of the driver and the driver is mounted on the first region of the bench by a flip-chip technique so that the primary surface of the driver faces to the first region.

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4. The optical module according to claim 3, wherein the optical module further comprises a chip carrier mounted on the secondary surface of the driver, the light-receiving semiconductor device being mounted on the chip carrier.

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5. The optical module according to claim 3, wherein the optical module further comprises an optical device having a light-reflecting surface, the optical device being mounted on the secondary surface of the driver, the light-receiving semiconductor device being optically coupled to the second surface of the light-emitting semiconductor device through the light-reflecting surface of the optical device.

6. The optical module according to claim 3, wherein the light-receiving semiconductor device has a light-incident surface inactive to the light emitted from the light-emitting semiconductor device and a light-sensitive surface, the light-incident surface facing to the second surface of the light-emitting semiconductor device and the light-sensitive surface crossing the light-incident surface.

7. The optical module according to claim 6, wherein the light-receiving semiconductor device is mounted on the secondary surface of the driver in a configuration that the light-sensitive surface faces to the secondary surface of the driver.

8. The optical module according to claim 1, further comprising an optical

fiber having a tip facing to the light-emitting semiconductor device for receiving the light emitted from the first surface of the light-emitting semiconductor device.

5 9. The optical module according to claim 8, wherein the bench further comprises a third region and a fourth region, the regions from the first to the fourth being arranged along a predetermined direction, the third region of the bench having a first groove parallel to the predetermined direction for setting the optical fiber therein.

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10. The optical module according to claim 9, wherein the bench further comprises a second groove between the second region and the third region, the second groove intersecting to the predetermined direction and the first groove reaching the second groove, and

15 wherein the second groove has a side, the optical fiber being aligned to the light-emitting semiconductor device mounted in the second region of the bench by abutting the tip of the optical fiber to the side of the second groove.

20 11. The optical module according to claim 1, wherein the bench is made of an insulator.

12. The optical module according to claim 1, wherein the bench is made of silicon.

25 13. The optical module according to claim 8, wherein the light-emitting

semiconductor device, the light-receiving semiconductor device, and the tip of the optical fiber are encapsulated by a resin transparent to the light emitted from the light-emitting semiconductor device.